WHAT IS CLAIMED IS:

1   1. A method comprising:

2   identifying a plurality of secondary nodes to which an update to data is sent, wherein

3   at least one secondary node of the plurality of secondary nodes inserts the update in a

4   respective log of updates to a respective copy of the data; and

5   sending a notification to each of the plurality of secondary nodes when all of the plurality of

6   secondary nodes have acknowledged the update.

1   2. The method of claim 1 wherein

2   each secondary node of the at least one secondary node clears the update from the respective

3   log of updates in response to receiving the notification.

1   3. The method of claim 2 wherein

2   clearing the update from the respective log comprises updating a start-of-log pointer in the

3   respective log.

1   4. The method of claim 2 wherein

2   the clearing the update from the respective log comprises updating a pointer to a location in

3   the respective log, wherein

4   the pointer points to the location if the location contains a next update to clear.

1   5. The method of claim 1 further comprising:

2   determining that a location of a next update in a first respective log of updates to a first

3   respective copy of the data at a first secondary node of the secondary nodes differs

4   from a corresponding location of the next update in a second respective log of updates

5   to a second respective copy of the data at a second secondary node of the secondary

6   nodes; and

7   identifying a set of updates in the first respective log, wherein

8   each update of the set of updates is not in the second respective log; and

9   synchronizing the first respective copy and the second respective copy by applying the set of

10   updates to the second respective copy.

1   6. The method of claim 1 wherein

2   the determining occurs when a primary node maintaining the data fails.

1   7.   The method of claim 1 further comprising:

2   setting a sent indicator for the update for one of the plurality of secondary nodes when the

3   update is sent to the one secondary node.

1   8.   The method of claim 7 further comprising:

2   setting a received indicator for the update for the one secondary node when an

3   acknowledgement of the update is received from the one secondary node.

1   9.   The method of claim 8 wherein

2   the sending the notification to each of the plurality of secondary nodes comprises determining

3   that a respective sent indicator and a respective received indicator for the update are

4   set for each of the plurality of secondary nodes.

1   10. A system comprising:

2   identifying means for identifying a plurality of secondary nodes to which an update to data is

3   sent, wherein

4   at least one secondary node of the plurality of secondary nodes inserts the update in a

5   respective log of updates to a respective copy of the data; and

6   sending means for sending a notification to each of the plurality of secondary nodes when all

7   of the plurality of secondary nodes have acknowledged the update.

1   11. The system of claim 10 further comprising:

2   clearing means for clearing the update from the respective log of updates in response to

3   receiving the notification.

1   12. The system of claim 10 further comprising:

2   determining means for determining that a location of a next update in a first respective log of

3   updates to a first respective copy of the data at a first secondary node of the secondary

4   nodes differs from a corresponding location of the next update in a second respective

5   log of updates to a second respective copy of the data at a second secondary node of

6   the secondary nodes; and

7   second identifying means for identifying a set of updates in the first respective log, wherein

8   each update of the set of updates is not in the second respective log; and

9   synchronizing means for synchronizing the first respective copy and the second respective

10   copy by applying the set of updates to the second respective copy.

1   13. A system comprising:

2   an identifying module to identify a plurality of secondary nodes to which an update to data is

3   sent, wherein

4   at least one secondary node of the plurality of secondary nodes inserts the update in a

5   respective log of updates to a respective copy of the data; and

6   a sending module to send a notification to each of the plurality of secondary nodes when all

7   of the plurality of secondary nodes have acknowledged the update.

1   14. The system of claim 13 further comprising:

2   a clearing module to clear the update from the respective log of updates in response to

3   receiving the notification.

1   15. The system of claim 14 wherein

2   the clearing module further comprises

3   an updating module to update a start-of-log pointer in the respective log.

1   16. The system of claim 14 wherein

2   the clearing module further comprises

3   an updating module to update a pointer to a location in the respective log, wherein

4   the pointer points to the location if the location contains a next update to clear.

1   17. The system of claim 13 further comprising:

2   a determining module to determine that a location of a next update in a first respective log of

3   updates to a first respective copy of the data at a first secondary node of the secondary

4   nodes differs from a corresponding location of the next update in a second respective

5   log of updates to a second respective copy of the data at a second secondary node of

6   the secondary nodes; and

7   a second identifying module to identify a set of updates in the first respective log, wherein

8   each update of the set of updates is not in the second respective log; and

9   a synchronizing module to synchronize the first respective copy and the second respective

10   copy by applying the set of updates to the second respective copy.

1   18. A computer-readable medium comprising:

2   identifying instructions to identify a plurality of secondary nodes to which an update to data

3   is sent, wherein

4 at least one secondary node of the plurality of secondary nodes inserts the update in a

5 respective log of updates to a respective copy of the data; and

6 sending instructions to send a notification to each of the plurality of secondary nodes when

7 all of the plurality of secondary nodes have acknowledged the update.

1 19. The computer-readable medium of claim 18 further comprising:

2 clearing instructions to clear the update from the respective log of updates in response to

3 receiving the notification.

1 20. The computer-readable medium of claim 19 wherein

2 the clearing instructions further comprise

3 updating instructions to update a start-of-log pointer in the respective log.

1 21. The computer-readable medium of claim 19 wherein

2 the clearing instructions further comprise

3 updating instructions to update a pointer to a location in the respective log, wherein

4   the pointer points to the location if the location contains a next update to clear.

1 22. The computer-readable medium of claim 18 further comprising:

2 determining instructions to determine that a location of a next update in a first respective log

3 of updates to a first respective copy of the data at a first secondary node of the

4 secondary nodes differs from a corresponding location of the next update in a second

5 respective log of updates to a second respective copy of the data at a second

6 secondary node of the secondary nodes; and

7 second identifying instructions to identify a set of updates in the first respective log, wherein

8 each update of the set of updates is not in the second respective log; and

9 synchronizing instructions to synchronize the first respective copy and the second respective

10 copy by applying the set of updates to the second respective copy.

1 23. A computer system comprising:

2 a processor for executing instructions, and

3 a memory to store the instructions, wherein the instructions comprise

4 identifying instructions to identify a plurality of secondary nodes to which an update

5   to data is sent, wherein

6   at least one secondary node of the plurality of secondary nodes inserts the

7   update in a respective log of updates to a respective copy of the data;

8   and

9   sending instructions to send a notification to each of the plurality of secondary nodes

10   when all of the plurality of secondary nodes have acknowledged the update.

1   24. The computer system of claim 23 wherein

2   the instructions further comprise:

3   clearing instructions to clear the update from the respective log of updates in response

4   to receiving the notification.

1   25. The computer system of claim 23 wherein

2   the instructions further comprise

3   determining instructions to determine that a location of a next update in a first

4   respective log of updates to a first respective copy of the data at a first

5   secondary node of the secondary nodes differs from a corresponding location

6   of the next update in a second respective log of updates to a second respective

.7   copy of the data at a second secondary node of the secondary nodes; and

8   second identifying instructions to identify a set of updates in the first respective log,

9   wherein

10   each update of the set of updates is not in the second respective log; and

11   synchronizing instructions to synchronize the first respective copy and the second

12   respective copy by applying the set of updates to the second respective copy.